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1.0 Introduction

The East Bay Regional Communications System Authority (EBRCSA) hereby requests approval for the licensing of 63 channels in the 700-MHz public safety communications band. (Note that we are using the term “channel” to mean a pair of aggregated 6.25 kHz channels, numbered by the FCC – e.g., channels 15 & 16. Thus, 63 channels means sixty-three numbered channel pairs, each comprising 12.5 kHz of spectrum for use as a single channel.)

Together, Alameda and Contra Costa Counties encompass a land area of over 1,500 square miles with a combined population of over 2.5 million people. At build out, the East Bay Regional Communications System will utilize 36 sites strategically located throughout both counties, to support a P25 Phase II compliant communications system designed to provide fully interoperable communications for all public agencies within the two counties.

The EBRCSA is a Joint Powers Authority (JPA) established on September 11, 2007 to own, build and operate the communications system. In California State Statue, a JPA is viewed as an independent governmental agency with powers that accrue to one of the member agencies. Currently, there are 35 member agencies consisting of the two counties, 29 cities and four special districts. The EBRCSA Board of Directors is comprised by 23 representatives, consisting of elected officials, police chiefs, fire chiefs and city managers who will be responsible for the overall development, operation and funding of the system.

EBRCSA Member Agencies	
Alameda County	Town of Moraga
Contra Costa County	City of Newark
City of Alameda	City of Oakley
City of Albany	City of Pinole
City of Antioch	City of Pittsburg
City of Brentwood	City of Pleasant Hill
City of Clayton	City of Pleasanton
City of Concord	City of Richmond
Town of Danville	City of San Leandro
City of Dublin	City of San Pablo
City of El Cerrito	City of San Ramon
City of Emeryville	City of Union City
City of Fremont	City of Walnut Creek
City of Hayward	East Bay Regional Park District
City of Hercules	Kensington Police Community Services District
City of Lafayette	Rodeo-Hercules Fire Protection District
City of Livermore	San Ramon Valley Fire Protection District
City of Martinez	

The system is designed and sized to offer participation to adjoining counties, as well as state and federal agencies. The EBRCSA is part of the Bay Area SUASI and has been working closely with our partners, the West Bay Regional Communications System (WBRCS) and the Silicon Valley Regional Communications System (SVRCS), to ensure that all of our infrastructure purchases are closely coordinated with the goal of developing connections with each system to provide region-wide interoperability.

2.0 System Description

The East Bay Regional Communications System (EBRCS) consists of six simulcast systems and six additional sites, summarized below. The system will be compliant to Project 25 Phase II (two-slot TDMA in a 12.5-kHz channel with a Phase I control channel). The system will gradually transition to full Phase II operation, with the goal of full compliance to the FCC mandate for 6.25 kHz equivalent performance by January 1, 2017.

2.1 Alameda County Northwest

The Alameda County Northwest simulcast system comprises four sites and 16 channels in Alameda County. The system is designed to provide coverage in the urban areas of Alameda, Albany, Berkeley, Emeryville, Oakland, and Piedmont. The system is designed to support 8809 users, including roamers and wide-area callers.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Glen Dyer Jail	37-48-00.0	122-16-37.2	43	351	9	Omni	N/A	3	302
Seneca Reservoir	37-45-22.7	122-09-25.8	300	62	9	Omni	N/A	3	148
U.C.-Berkeley	37-52-39.6	122-14-48.4	1087	60	9	Omni	N/A	3	309
Skyline Reservoir	37-49-13.1	122-11-05.1	1539	94	12	80	270	5	602.6

2.2 Alameda County Southwest

The Alameda County Southwest simulcast system comprises seven sites and 12 channels in Alameda County. The system is designed to provide coverage in the urban areas of Fremont, Hayward, Newark, San Leandro, and Union City. The system is designed to support 4400 users, including roamers and wide-area callers.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Fremont PD	37-33-01.0	121-58-06.0	53	62.8	9	Omni	N/A	3	288.4
Garin WT	37-37-54.0	122-01-58.0	663	52.8	9	Omni	N/A	3	295.1
San Leandro Hills	37-43-26.3	122-07-10.4	808	50	9	Omni	N/A	3	295.1
Warm Springs BART	37-29-58.0	121-56-16.0	56	132.8	9	Omni	N/A	3	288.4
Coyote Hills	37-32-25.5	122-04-56.4	285.4	61.3	13	180	70	3	362.9
Walpert Ridge	37-39-19.0	122-00-08.7	1490	52.8	9	Omni	N/A	5	144.5
Hayward PD	37-39-27.0	122-05-49.0	72	87.8	9	Omni	N/A	3	288.4

2.3 Alameda County East

The Alameda County East simulcast system comprises four sites and ten channels in Alameda County. The system is designed to provide coverage in the urban areas of Dublin, Livermore, and Pleasanton. The system is designed to support 2784 users, including roamers and wide-area callers.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Doolan Canyon	37-42-38.5	121-49-06.5	732	71.3	12	220	180	0	436.5
Sunol Ridge	37-37-11.2	121-55-21.6	2179	70	15	120	50	4	295.1
Altamont	37-41-22.6	121-37-55.2	1638	152.8	9	Omni	N/A	7	239.9
East Dublin BART	37-42-10.7	121-53-48.8	335	152.8	9	Omni	N/A	3	239.9

2.4 Contra Costa West

The Contra Costa West simulcast system comprises four sites and eight channels in Contra Costa County. The system is designed to provide coverage in the urban areas of El Cerrito, Hercules, Kensington, Pinole, Richmond, and San Pablo. The system is designed to support 2223 users, including roamers and wide-area callers.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Turquoise	37-59-35.8	122-16-11.4	587.3	57.8	9	Omni	N/A	3	281.8
El Cerrito PD	37-54-58.7	122-18-39.9	68.9	61.3	13	180	350	3	416.9
Pearl Ridge Reservoir	37-57-27.2	122-18-44.7	659.5	72.8	9	Omni	N/A	9	281.8
Nichol Knob	37-55-13.0	122-22-55.0	298	42.8	9	Omni	N/A	1.25	281.8

2.5 Contra Costa Central

The Contra Costa Central simulcast system comprises eight sites and ten channels in Contra Costa County. The system is designed to provide coverage in the urban areas of Clayton, Concord, Danville, Lafayette, Martinez, Moraga, Orinda, Pleasant Hill, San Ramon, and Walnut Creek. The system is designed to support 2957 users, including roamers and wide-area callers.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Harbor View	38-00-25.4	122-07-35.4	229	42.8	9	Omni	N/A	1.25	275.4
Bald Peak	37-53-01.1	122-13-19.0	1886	83	14.5	63	90	4	346.9
Cummings Peak	38-01-44.8	122-11-51.2	869	102.8	9	Omni	N/A	3	275.4
Highland Peak	37-48-53.2	121-48-31.2	2509	73	14.5	63	240	5	346.9
Peters Ranch Rd./Apollo	37-47-12.6	121-59-32.8	931	42.8	9	Omni	N/A	1.25	281.8
Sydney Drive	37-52-02.3	122-03-07.5	715	56.3	12	220	50	0	416.7
Kregor Peak	37-56-34.7	121-53-27.7	1840	78	14.5	63	60	4	346.9
Alta Mesa Moraga	37-50-10.8	122-07-04.9	980	27.8	9	Omni	N/A	3	275.4

2.6 Contra Costa East

The Contra Costa East simulcast system comprises three sites and seven channels in Contra Costa County. The system is designed to provide coverage in the urban areas of Antioch, Brentwood, Oakley, and Pittsburgh. The system is designed to support 1871 users, including roamers and wide-area callers.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Kregor Peak	37-56-34.7	121-53-27.7	1840	78	14.5	63	60	5	467.7
Shadybrook	38-00-11.8	121-56-56.1	748	26.3	13	180	65	6	676.1
Los Vaqueros	37-49-01.0	121-46-43.7	2057	42.8	9	Omni	N/A	5	269.2

2.7 Gwin

The Gwin site is a four-channel standalone (non-simulcast) trunked site in northwest Alameda County. The site is designed to provide coverage in the Caldecott tunnel area. The site is designed to support 635 users, including roamers and wide-area callers. This site will utilize 800-MHz frequencies.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Gwin	37-51-45.7	122-13-21.2	1367	35	9	Omni	N/A	3	300

2.8 Niles Canyon

The Niles Canyon is a five-channel standalone trunked site in central Alameda County. The site is designed to provide coverage for a key transportation corridor through the hills between eastern and western Alameda County. The site is designed to support 823 users, including roamers and wide-area callers. This site will utilize 800-MHz frequencies.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Niles Canyon	37-35-53.6	121-55-56.7	817	42.8	9	Omni	N/A	1.25	123

2.9 Crane Ridge

The Crane Ridge is a four-channel standalone trunked site in eastern Alameda County. The site is designed to provide coverage serving the mountainous areas in the southeast of Alameda County. The site is designed to support 665 users, including roamers and wide-area callers. This site will utilize 800-MHz frequencies.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Crane Ridge	37-36-23.6	121-37-14.5	2904	52.2	6.5	Omni	N/A	5	162.2

2.10 Crockett

The Crockett site is a five-channel standalone trunked site in central Contra Costa County. The site is designed to provide coverage for the Carquinez Bridge area. The site is designed to support 547 users, including roamers and wide-area callers. This site will utilize 800-MHz frequencies.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Crockett	38-03-22.1	122-13-03.8	62.3	37.8	9	Omni	N/A	1.25	281.8

2.11 Marsh Creek

The Marsh Creek site is a four-channel standalone trunked site in eastern Contra Costa County. The site is designed to provide coverage around the Marsh Creek Detention Facility. The site is designed to support 419 users, including roamers and wide-area callers. This site will utilize 800-MHz frequencies.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Marsh Creek	37-53-40.7	121-41-47.8	741	35	9	Omni	N/A	3	300

2.12 Fire Station #53

The Fire Station #53 site is a three-channel standalone trunked site in eastern Contra Costa County. The site is designed to provide coverage in the mountainous terrain of eastern Contra Costa County. The site is designed to support 272 users, including roamers and wide-area callers. This site will utilize 800-MHz frequencies.

Site Name	North Latitude	West Longitude	Elevation (ft AMSL)	TX Ant Ht to Tip (ft AGL)	TX Ant Gain (dBd)	TX Ant BW (deg)	TX Ant Azimuth (deg)	TX Ant Downtilt (deg)	ERP (W)
Fire Station #53	37-53-38.0	121-47-39.0	374	35	9	Omni	N/A	0	300

6.0 Project Implementation Schedule

The EBRCSA system comprises six simulcast subsystems and six standalone sites, with connectivity provided through a microwave system. The projected milestones for completing the individual cells and stand alone sites are listed below:

Milestone	Date	
Radio System RFP Released	2006	
Radio System Contract Awarded	2006	
Implementation	**Infrastructure Complete**	**Full Loading**
Alameda Northwest Simulcast System	June 2011	2023
Alameda Southwest Simulcast System	June 2012	2015
Alameda East Simulcast System	June 2010	2015
Contra Costa West Simulcast System	June 2010	2015
Contra Costa Central Simulcast System	June 2013	2015
Contra Costa East Simulcast System	December 2013	2023
Gwin Site	June 2015	2023
Crane Ridge	June 2015	2023
Crockett	June 2015	2015
Niles Canyon	June 2015	2015
Marsh Creek	June 2015	2023
Fire Station #53	June 2015	2023

7.0 Project Funding Statement

The estimated total system cost is approximately $64 million. It is estimated that the probable cost to complete the system is approximately $30 million. To date, the majority of the infrastructure has been funded by grants from the Federal Government through multiple sources. The EBRCSA Finance Committee is developing financing options combining local revenue with future grants to complete the main system build-out by 2013. The remaining standalone sites will be completed by 2015.

Table 7-1 summarizes grant funding received and pending.

Table 7-1
Grants Received and Pending

Year	Grant Fund End Date	Source	Alameda County	Contra Costa County	Total	Status
2004		UASI	$ 5,400,000	$ -	$ 5,400,000	Received
2004		SHSGP	$ 5,519,819	$ 223,293	$ 5,743,112	Received
2005		UASI	$ 1,347,694	$ 737,732	$ 2,085,426	Received
2005		SHSGP	$ -	$ 309,294	$ 309,294	Received
2006	03/01/08	SUASI	$ 2,150,000	$ 1,000,000	$ 3,150,000	Received
2006	03/01/08	SHSGP	$ 1,842,866	$ 828,899	$ 2,671,765	Received
2007	03/01/10	SHSGP	$ 1,758,000	$ 835,000	$ 2,593,000	Received
2007	03/01/10	SUASI	$ 645,425	$ 551,425	$ 1,196,850	Received
2007	09/01/10	COPS	$ 500,000	$ 1,500,000	$ 2,000,000	Received
2007	09/01/10	COPS*			$ 500,000	Received
2008	03/01/10	Earmark			$ 808,000	Received
2008		SHSGP	$ 1,358,767	$ 850,000	$ 2,208,767	In Process
2008	06/01/11	PSIC**			$ 3,889,498	In Process
2008		PSIC*			$ 1,004,198	In Process
2009		Earmark			$ 1,170,000	In Process
Total					**$ 34,729,910**	

Table 7-2 represents anticipated future funding sources, amounts, and completes the financial forecasting for completion of the EBRCSA radio project.

Table 7-2
Future Funding

Cell	2010	2011	2012	2013	2014	2015	Total Revenue
ALCO Northwest		X					
ALCO Southwest		X					
ALCO East	X						
COCO West	X						
COCO Central			X				
COCO East			X				
Standalone Sites				X	X	X	
Bond		$ 24,000,000					$24,000,000
Grants		$ 2,240,000	$ 2,240,000	$ 2,240,000	$ 2,240,000	$ 2,240,000	$11,200,000
Financing							
Bond Issuance		$ 24,000,000					
Grants		$ 11,200,000					
Total		$ 35,200,000					$35,200,000